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<120> CASSAVA VEIN MOSAIC VIRUS PROMOTERS AND USES THEREOF

<130> MYC0011S

<140> 09/202,838

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<150> PCT/US97/10376

<151> 1997-06-20

<150> 60/020,129

<151> 1996-06-20

<160> 36

<170> PatentIn Ver. 2.1

<210> 1

<211> 392

<212> DNA

<213> Cassava vein mosaic virus

<400> 1

agctcagcaa gaagcagatc aatatgcggc acatatgcaa octtatgttca aaaatgaaga 60
atgtacagat acaagatcct atactgccag aatacgaaga agaatacgta gaaattgaaa 120
aagaagaacc aggccaagaa aagaatcttg aagacgttaag cactgacgac aacaatgaaa 180
agaagaagat aaggtcggtg atttgtgaaag agacatagag gacacatgtt aggtggaaaa 240
tgtaaggcg gaaagtaacc ttatcacaaa ggaatcttat ccccccactac ttatcctttt 300
atatttttcc gtgtcatttt tgcccttgag ttttcctata taaggaacca agttcggcat 360
ttgtgaaaac aagaaaaaat ttggtgtaag ct 392

<210> 2

<211> 524

<212> DNA

<213> Cassava vein mosaic virus

<400> 2

ggtaccagaa ggtaatttac caagatgttag catcaagaat ccaatgttta cgggaaaaac 60
tatggaagta ttatgtgagc tcagcaagaa gcagatcaat atgcggcaca tatgcaacct 120
atgttcaaaa atgaagaatg tacagataca agatcctata ctgccagaat acgaagaaga 180

atacgtagaa attaaaaaag aagaaccagg cgaagaaaag aatcttgaag acgtaagcac 240
tgacgacaac aataaaaaga agaagataaag gtcggtgatt gtgaaagaga catagaggac 300
acatgttaagg tggaaatgt aaggcgaa agtaacctta tcacaaagga atcttatccc 360
ccactactta tcctttata ttttccgtg tcattttgc cttgagttt tcctatataa 420
ggaaccaagt tcggcattt tgaaaacaag aaaaatttg gtgtaaagcta tttctttga 480
agtactgagg atacaagttc agagaaattt gtaagtttga attc 524

<210> 3
<211> 524
<212> DNA
<213> Cassava vein mosaic virus

<400> 3
ggtaccagaa ggtaattatc caagatgtag catcaagaat ccaatgttta cggaaaaac 60
tatggaagta ttatgtgagc tcagcaagaa gcagatcaat atgcggcaca tatgcaacct 120
atgttcaaaa atgaagaatg tacagataca agatccata ctgccagaat acgaagaaga 180
atacgtagaa attaaaaaag aagaaccagg cgaagaaaag aatcttgaag acgtaagcac 240
tgacgacaac aataaaaaga agaagataaag gtcggtgatt gtgaaagaga catagaggac 300
acatgttaagg tggaaatgt aaggcgaa agtaacctta tcacaaagga atcttatccc 360
ccactactta tcctttata ttttccgtg tcattttgc cttgagttt tcctatataa 420
ggaaccaagt tcggcattt tgaaaacaag aaaaatttg gtgtaaagcta tttctttga 480
agtactgagg atacaagttc agagaaattt gtaagtttga attc 524

<210> 4
<211> 411
<212> DNA
<213> Cassava vein mosaic virus

<400> 4
ggatcctatg ttcaaaaatg aagaatgtac agatacaaga tcctatactg ccagaatacg 60
aagaagaata cgtagaaatt gaaaaagaag aaccaggcga agaaaagaat cttgaagacg 120
taagcactga cgacaacaat gaaaagaaga agataaggc ggtgattgt aaagagacat 180
agaggacaca tgtaaggtgg aaaatgtaaag ggccgaaagt aacttatca caaaggaatc 240
ttatccccca ctacttatcc ttttatattt ttccgtgtca ttttgcct tgagtttcc 300
tatataagga accaagttcg gcatttgta aaacaagaaa aaatttggtg taagctattt 360
tctttaagt actgaggata caagttcaga gaaatttgc agtttgaattt c 411

<210> 5
<211> 305
<212> DNA
<213> Cassava vein mosaic virus

<400> 5
ggatcctgaa gacgtaagca ctgacgacaa caatgaaaag aagaagataa ggtcggtgat 60
tgtgaaagag acatagagga cacatgttaag gtggaaaatg taagggcga aagtaacctt 120

atcacaaagg aatcttatcc cccactactt atcctttat attttcgt gtcattttg 180
cccttgagtt ttccttatata aggaaccaag ttgcgcattt gtaaaaacaa gaaaaaattt 240
ggtgttaagct atttctttg aagtactgag gatacaagtt cagagaaattt tgtaagttt 300
aattc 305

<210> 6
<211> 261
<212> DNA
<213> Cassava vein mosaic virus

<400> 6
ggatccggtc ggtgattgtg aaagagacat agaggacaca tgtaagggtgg aaaatgttaag 60
ggcggaaaagt aaccttatca caaaggaatc ttatccccca ctacttatcc ttttatattt 120
ttccgtgtca ttttgcctt tgagtttcc tatataagga accaagttcg gcatttgtga 180
aaacaagaaa aaatttggtg taagctattt tcttgaagt actgaggata caagttcaga 240
gaaatttgtta agtttgaattt c 261

<210> 7
<211> 193
<212> DNA
<213> Cassava vein mosaic virus

<400> 7
ggatccttat cacaaggaa tcttatcccc cactacttat ccttttatat tttccgtgt 60
cattttgcc cttgagttt cctatataag gaaccaagtt cgccatttgtt gaaaacaaga 120
aaaaatttgg tgtaagctat tttcttgaa gtactgagga tacaagttca gagaatttg 180
taagttgaa ttc 193

<210> 8
<211> 143
<212> DNA
<213> Cassava vein mosaic virus

<400> 8
ggatccgtgt cattttgcc cttgagttt cctatataag gaaccaagtt cgccatttgt 60
gaaaacaaga aaaaatttgg tgtaagctat tttcttgaa gtactgagga tacaagttca 120
gagaatttg taagttgaa ttc 143

<210> 9
<211> 420
<212> DNA
<213> Cassava vein mosaic virus

<400> 9

tctagaccag aaggtaatta tccaagatgt agcatcaaga atccaatgtt tacggaaaa 60
actatgaaag tattatgtga gctcagcaag aagcagatca atatgcggca catatggatc 120
ctgaagacgt aagcaactgac gacaacaatg aaaagaagaa gataaggtcg gtgattgtga 180
aagagacata gaggacacat gtaaggtgga aaatgtaagg gcggaaagta accttatacac 240
aaaggaatct tatccccac tacttatctt ttatatttt tccgtgtcat tttgccctt 300
gagtttcct atataaggaa ccaagttcg catttgtgaa aacaagaaaa aatttgggtgt 360
aagctatccc cttgaagta ctgaggatac aagttcagag aaatttgcata gttgaattc 420

<210> 10
<211> 482
<212> DNA
<213> Cassava vein mosaic virus

<400> 10
tctagaccag aaggtaatta tccaagatgt agcatcaaga atccaatgtt tacggaaaa 60
actatgaaag tattatgtga gctcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcaagaaaa agatccgtt cggtgattgt 240
gaaagagaca tagaggacac atgtaaaggta gaaaatgtaa gggcggaaag taaccttatac 300
acaaaggaaat cttatcccc actacttatac ctttatattt ttccgtgtc attttgccctt 360
ttgagtttc ctatataagg aaccaagttc ggcatttgtg aaaacaagaa aaaatttgggt 420
gtaagctatt ttcttgaag tactgaggat acaagttcag agaaatttgcata aagttgaat 480
tc

<210> 11
<211> 458
<212> DNA
<213> Cassava vein mosaic virus

<400> 11
tctagaccag aaggtaatta tccaagatgt agcatcaaga atccaatgtt tacggaaaa 60
actatgaaag tattatgtga gctcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcaagaaaa agaatcttgcata agacgtaaac 240
actgacgaca acaatgaaaa gaagaggatc cttatcacaa aggaatcttgcata tcccccacta 300
cttacccctt tatatttttc cgtgtcattt ttcccttgcata gtttccttat ataaggaacc 360
aagttcggca tttgtgaaaa caagaaaaaa ttgtgttgcata gctatccat ttgaagtact 420
gaggatacaa gttcagagaa atttgcata gttgaattc 458

<210> 12
<211> 468
<212> DNA
<213> Cassava vein mosaic virus

<400> 12

tctagaccag aaggttaatta tccaaatgtt agcatcaaga atccaatgtt tacggaaaa 60
actatggaag tattatgtga gctcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcgaagaaa agaatcttga agacgtaa 240
actgacgaca acaatgaaaa gaagaagata aggtcgatc cttatcacaa aggaatctt 300
tccccccacta cttatcctt tatattttc cgtgtcattt ttgcccttga gtttcctat 360
ataaggaacc aagttcggca tttgtgaaaa caagaaaaaa tttggtgtaa gctatttct 420
ttgaagtact gaggatacaa gttcagagaa atttgtaagt ttgaattc 468

<210> 13
<211> 491
<212> DNA
<213> Cassava vein mosaic virus

<400> 13
tctagaccag aaggttaatta tccaaatgtt agcatcaaga atccaatgtt tacggaaaa 60
actatggaag tattatgtga gctcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcgaagaaa agaatcttga agacgtaa 240
actgacgaca acaatgaaaa gaagaagata aggtcgatc ttgtgaaaga gacatagagg 300
atccttatca caaaggaatc ttatccccca ctacttatcc ttttatattt ttccgtgtca 360
tttttgcct tgagtttcc tatataagga accaagttcg gcatttgtaa aaacaagaaa 420
aaatttggtg taagctattt tctttgaagt actgaggata caagttcaga gaaatttcta 480
agtttgaatt c 491

<210> 14
<211> 408
<212> DNA
<213> Cassava vein mosaic virus

<400> 14
tctagaccag aaggttaatta tccaaatgtt agcatcaaga atccaatgtt tacggaaaa 60
actatggaag tattatgtga gctcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcgaagaaa agaatcttga agacgtaa 240
actgacgaca acaatgaaaa gaagaggatc cgtgtcattt ttgcccttga gtttcctat 300
ataaggaacc aagttcggca tttgtgaaaa caagaaaaaa tttggtgtaa gctatttct 360
ttgaagtact gaggatacaa gttcagagaa atttgtaagt ttgaattc 408

<210> 15
<211> 418
<212> DNA
<213> Cassava vein mosaic virus

<400> 15

tctagaccag aaggtaatta tccaagatgt agcatcaaga atccaatgtt tacggaaaa 60
actatggaag tattatgtga gtcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcgaagaaa agaatcttga agacgtaagc 240
actgacgaca acaatgaaaa gaagaagata aggtcggtc cgtgtcattt ttgcccttga 300
gtttccat ataaggaacc aagttcggca ttgtgaaaa caagaaaaaa ttgggtgtaa 360
gctattttct ttgaagtact gaggatacaa gttcagagaa atttgtaagt ttgaattc 418

<210> 16
<211> 441
<212> DNA
<213> Cassava vein mosaic virus

<400> 16
tctagaccag aaggtaatta tccaagatgt agcatcaaga atccaatgtt tacggaaaa 60
actatggaag tattatgtga gtcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcgaagaaa agaatcttga agacgtaagc 240
actgacgaca acaatgaaaa gaagaagata aggtcggtc ttgtgaaaga gacatagagg 300
atccgtgtca ttttgcct tgagtttcc tatataagga accaagttcg gcatttgta 360
aaacaagaaa aaatttggtg taagctattt tcttgaaagt actgaggata caagttcaga 420
gaaatttcta agtttgaatt c 441

<210> 17
<211> 476
<212> DNA
<213> Cassava vein mosaic virus

<400> 17
tctagaccag aaggtaatta tccaagatgt agcatcaaga atccaatgtt tacggaaaa 60
actatggaag tattatgtga gtcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcgaagaaa agaatcttga agacgtaagc 240
actgacgaca acaatgaaaa gaagaagata aggtcggtc ttgtgaaaga gacatagagg 300
acacatgtaa ggtggaaat gtaaggccgg aaaggatccg tgtcatttt gcccttgagt 360
tttcctatat aaggAACCA gttcggcatt tgtgaaaaca agaaaaaaatt tgggtgaagc 420
tattttctt gaagtactga ggataacaagt tcagagaaat ttgttaagttt gaattc 476

<210> 18
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 18
accggtaacc gaaggtaatt atccaagatg t 31

<210> 19
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 19
cggaattcaa acttacaaat ttctctgaag 30

<210> 20
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 20
cgcgatccag actgaatgcc cacaggccgt cgag 34

<210> 21
<211> 17
<212> DNA
<213> Cassava vein mosaic virus

<400> 21
agacgtaaagc actgacg 17

<210> 22
<211> 22
<212> DNA
<213> Cassava vein mosaic virus

<400> 22
cttatacaca aggaatctta tc 22

<210> 23

<211> 22
<212> DNA
<213> Cassava vein mosaic virus

<400> 23
cttatacaca aggaatctta tc 22

<210> 24
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 24
gctctagacc agaaggtaat tatccaaag 28

<210> 25
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 25
tatggatcct atgttcaaaa atgaag 26

<210> 26
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 26
aaaggatcct gaagacgtaa gcactg 26

<210> 27
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 27
agaggatccg gtcggtgatt gtgaa 25

<210> 28
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 28
aaaggatcct tatcacaaag gaatc 25

<210> 29
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 29
tatggatccg tgtcattttt gcccttg 27

<210> 30
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 30
cggaattcaa acttacaaat ttctctaag 29

<210> 31
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 31 25
taaggatcct ttccgcctt acatt

<210> 32
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 32 25
catggatcct ctatgtctct ttcac

<210> 33
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 33 22
acaggatccg accttatctt ct

<210> 34
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 34 26
accggatcct cttctttca ttgttc

<210> 35
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 35
tcaggatcct tttttcgcc tggt

24

<210> 36
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 36
ataggatcca tatgtgccgc ata

23